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Received: 15 February 2023 | Accepted: 20 July 2023

DOI: 10.1002/vetr.3311

Vet Record

ORIGINAL RESEARCH

Mental wellbeing and psychosocial working conditions of autistic veterinary surgeons in the UK

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Funding information
Royal College of Veterinary Surgeons

Abstract

Background: Certain autistic characteristics (such as hyper-focus and attention to detail) are valued by veterinary surgeons and autistic adults may disproportionately self-select into the profession. Links between mental wellbeing and retention in the veterinary profession highlight an imperative to profile autistic veterinary surgeons' mental wellbeing and identify protective factors. The psychosocial work environment may represent one such protective factor. We aimed to assess autistic veterinary surgeons' mental wellbeing, the extent to which their psychosocial working conditions achieved UK government management standards and links between these.

Methods: Eighty-five autistic veterinary surgeons completed the Warwick–Edinburgh Mental Wellbeing Scale and the Health and Safety Executive's Management Standards Indicator Tool. Descriptive comparisons were drawn with normative data; correlation and linear regression analyses examined relations between mental wellbeing and psychosocial working conditions.

Results: Mental wellbeing and psychosocial work environment quality were markedly below veterinary surgeon and general workforce norms. Psychosocial working conditions accounted for 44% of the unique variance in mental wellbeing, with 'control' and 'role' making a significant contribution.

Limitation: This exploratory study involved a small self-selecting sample, raising the possibility of response bias.

Conclusion: Work design centred on the enhancement of control and role clarity would likely support mental wellbeing in this population.

KEYWORDS
Autism, Management Standards Indicator Tool, mental wellbeing, veterinary surgeons, Warwick–Edinburgh Mental Wellbeing Scale

INTRODUCTION

Autistic spectrum conditions (hereafter referred to as autism) are 'characterised by persistent deficits in the ability to initiate and sustain reciprocal social interaction and social communication, and by a range of restricted, repetitive and inflexible patterns of behaviour, interests or activities'.[1] Community survey data for adults living in private households and able to participate in an interview suggest an autism prevalence of 0.7% in the English workforce.[2] Higher rates are observed in professions requiring technical skills[3] and, as in human medicine,[4] autistic adults may be over-represented in veterinary surgery owing to the profession valuing autistic strengths such as hyper-focus, curiosity, self-motivation, attention to detail, pattern recognition, problem solving and empathy. While data on the prevalence of autism in veterinary surgery remain elusive, the rise in online peer-support groups such as 'Neurodiverse Vets' and initiatives such as the Royal College of Veterinary Surgeons' neurodiversity resource hub highlights the valuable contribution autistic veterinary surgeons make to the profession.

Mental wellbeing in autistic adults is generally poor relative to non-autistic adults and is often indicative of major depression or risk for depression.[5–7] Mental wellbeing has been profiled in the UK

veterinary surgeon population[8,9] and subgroups defined in terms of practice type,[10] with these studies indicating that mental wellbeing is broadly consistent with general adult population data,[11,12] while veterinary surgeon demographic subgroups such as those with a disability or medical condition report considerably poorer mental wellbeing. To date, no attempts have been made to profile the mental wellbeing of autistic veterinary surgeons. In the context of a profession experiencing exceptional challenges with recruitment and retention,[13] and in view of demonstrated linkages between mental wellbeing and intention to leave the profession,[9] this represents an important omission. Given that mental wellbeing underpins career sustainability in veterinary surgery, a concerted focus on its protection and promotion across the profession is warranted.

The design, management and organisation of work—the psychosocial work environment—represents one potential means by which to protect and promote mental wellbeing and, by extension, workforce sustainability in autistic veterinary surgeons. Psychosocial working conditions are known to be linked to veterinary surgeons' mental wellbeing, with a higher quality psychosocial work environment associated with better mental wellbeing.[8,9] Moreover, psychosocial working conditions are generally modifiable. In the UK, autism is covered by the Equality Act 2010, which requires employers to apply reasonable accommodations—that may encompass psychosocial work environment modification—to support autistic employees. This duty is affirmed in the Management of Health and Safety at Work Regulations 1999, which require employers to minimise and, where feasible, eliminate workers' exposure to potentially harmful psychosocial working conditions. To support organisations in these endeavours, the Health and Safety Executive (HSE)—the regulatory body for workplace health and safety—has delineated a set of aspirational management standards pertaining to seven key psychosocial work characteristics: demands, control, managerial support, peer support, relationships, role and change.[14]

To enable organisations to assess the extent to which they meet these aspirational management standards, monitor improvements over time and benchmark against general UK workforce norms, the HSE published the Management Standards Indicator Tool (MSIT),[15] a 35-item self-report survey instrument that assesses psychosocial work environment quality over the preceding 6-month period. The MSIT was administered to a representative sample of veterinary surgeons practising in the UK in 2007,[8] although the extent to which the management standards are achieved in contemporary UK veterinary practice remains unclear. Moreover, anecdotal evidence from online peer-support groups suggests that—much like autistic doctors[16]—autistic veterinary surgeons often experience the psychosocial work environment as particularly challenging relative to their non-autistic colleagues.

Aims of the study

In the absence of evidence concerning mental wellbeing in autistic veterinary surgeons, the first aim of this study was to generate a profile of mental wellbeing in this population and draw comparisons with veterinary surgeons and general adult population norms. A high-quality psychosocial work environment may represent a protective factor for mental wellbeing and retention. Thus, the second aim of this study was to explore the extent to which autistic veterinary surgeons' psychosocial working conditions meet aspirational UK government management standards and compare this to general workforce and veterinary surgeon norms. The third aim was to explore the strength and direction of linkages between psychosocial working conditions and mental wellbeing in order to generate recommendations on psychosocial work environment modifications to support mental wellbeing.

METHOD

Participants and procedure

The sample for this exploratory cross-sectional study consisted of veterinary surgeons who had graduated no less than 2 years previously, practised in the UK at that time and had an autism diagnosis or self-identified as autistic. We included individuals who had an autism diagnosis or self-identified as autistic because both are similar in terms of reported stigma, self-esteem, quality of life and autism identity[17] and experience no significant differences in relation to barriers to accessing healthcare support.[18] Moreover, the autism prevalence observed in British healthcare records[19] is lower than that typically found in community-based survey data,[2] suggesting that some individuals meet diagnostic criteria while remaining undiagnosed.

In April 2022, an invitation to participate in the study was posted to relevant Facebook groups and the study was promoted through letters in the Veterinary Record and Veterinary Times. Participation was promoted via regular re-posts over an 8-week period. The survey was hosted on the JISC Online Surveys platform. The first page of the survey presented detailed information about the study as well as consent questions; after providing informed consent, respondents progressed to the study questions. Participants could choose to not answer any questions or withdraw from the study at any point and no incentives were offered. Ethical approval for the study was granted by the Research Ethics Committee of the School of Veterinary Medicine at the University of Nottingham (ref. 3369 210430).

Measures

Mental wellbeing

Mental wellbeing was assessed using the Warwick–Edinburgh Mental Wellbeing Scale (WEMWBS),[20] which has been validated for use with UK veterinary surgeons[21,22] and for which veterinary-specific normative data are available.[9] Application of the WEMWBS in large-scale population surveys has also ensured the availability of normative data for the general adult populations of England and Scotland.[11,12] In Australia, the measure has been used to profile mental wellbeing in autistic adults.[5–7] The WEMWBS includes 14 positively framed statements that measure positive affect (e.g., feelings of optimism, cheerfulness and relaxation), psychological functioning (e.g., energy, clear thinking, self-acceptance and competence) and interpersonal relationships over the previous 2-week period. Sample items include 'I've been dealing with problems well' and 'I've been feeling close to other people'. Each item is scored on a five-point Likert scale from none of the time (1) to all of the time (5), with item scores summed to create an overall scale score ranging from 14 to 70, with higher scores indicating better wellbeing. In UK samples, a WEMWBS score of less than 40.5 is indicative of major depression, while a score between 40.5 and 44.5 indicates risk for depression.[23] A non-commercial WEMWBS user licence was obtained from the University of Warwick (registration ID: 552638164).

Psychosocial working conditions

The 35-item UK Health and Safety Executive's MSIT[15] was used to measure psychosocial work environment quality over the preceding 6-month period. Responses to the first 23 items are given on a five-point scale ranging from never (1) to always (5), with negatively framed items (e.g., 'I have unachievable deadlines') reverse scored so that low scores indicate poor psychosocial working conditions. Responses to the remaining items are given on a five-point scale of strongly disagree (1) to strongly agree (5), with negatively framed items (e.g., 'relationships at work are strained') reverse scored. A mean score is generated for each of the seven psychosocial work domains: demands, control, managerial support, peer support, relationships, role and change. For each domain, a score of 1 indicates poor psychosocial work environment quality, while 5 indicates that the standard is being met. Normative data are available for UK veterinary surgeons[8] and the general UK workforce.[24]

Demographic characteristics

Respondents indicated whether they had a medical diagnosis of autism or self-identified as autistic. Data were also collected on gender, age, years qualified and veterinary specialty.

Analytical approach

To address the first aim of the study, descriptive statistics (means and standard deviations) were calculated for mental wellbeing and compared to data for autistic adults,[6] the general veterinary surgeon population[9] and the English and Scottish general adult populations.[11,12] In addition, the proportion of respondents reporting WEMWBS scores indicative of major depression and risk for depression was calculated. For the second aim of the study, descriptive statistics were calculated for each management standard and compared to data for veterinary surgeons[8] and the general workforce.[24] All comparator data were specific to the UK, with one exception; in the absence of UK-specific WEMWBS scores pertaining to autistic adults, Australian data were used. To address the third aim of the study, Pearson's correlations were used to establish the strength and direction of relations between psychosocial work environment quality and mental wellbeing. Multiple linear regression was used to evaluate the relative contribution of the management standards to mental wellbeing after controlling for socio- and occupational-demographic variables (age, gender, years qualified).

RESULTS

Participant characteristics

A total of 106 surveys were submitted; after removal of ineligible and incomplete cases, analyses were conducted on 85 cases. Participant characteristics are displayed in Table 1. One-quarter of participants had an autism diagnosis, with the remainder self-identifying as autistic. Most respondents (85%) were female and worked in the companion animal sector (75%). The absence of data on the number of autistic veterinary surgeons who viewed the invitation to participate and information on the number of autistic veterinary surgeons working in the UK precludes a response rate calculation and definitive conclusions on sample representativeness.

Mental wellbeing

Table 2 displays mental wellbeing scores alongside comparator data, with higher scores indicating better mental wellbeing (maximum possible range, 14–70). The mean WEMWBS score for our sample of autistic veterinary surgeons (38.85) was comparable to the rate of 40.63 observed in Australian autistic adults.[6] Mental wellbeing was substantially lower than that observed in veterinary surgeon normative data (47.7)[9] as well

TABLE 1 Respondent demographic characteristics

Characteristics	*N* (%)
Formal autism diagnosis	
Yes	21 (24.7)
No	64 (75.3)
Gender	
Male	9 (10.6)
Female	72 (84.7)
Other	3 (3.5)
Prefer not to say	1 (1.2)
Age (years)	
20–29	13 (15.3)
30–39	30 (35.3)
40–49	23 (27.1)
50–59	18 (21.2)
≥60	1 (1.2)
Years qualified	
0–9	29 (34.1)
10–19	23 (27.1)
20–29	25 (29.4)
30–39	8 (9.4)
Job category	
Companion animal	64 (75.3)
Farm animal	6 (7.1)
Equine	1 (1.2)
Mixed (large only)	1 (1.2)
Mixed (companion and large)	3 (3.5)
Government	1 (1.2)
Veterinary education	3 (3.5)
Research	1 (1.2)
Other	3 (3.5)
Prefer not to say	2 (2.4)

as that of the general adult populations of England (49.9) and Scotland (48.6).[11,12] Fifty-nine percent of respondents reported a WEMWBS score indicative of major depression, while a further 19% were at risk for depression.

Psychosocial working conditions

Mean scores, standard deviations and Cronbach's α coefficients for autistic veterinary surgeons on each of the management standards are shown in Table 3. A score of 1 indicates poor psychosocial work environment quality, while 5 indicates achievement of the standard. A comparison of scores to UK private sector workforce norms ($N = 7589$)[24] is displayed in Table 3. The quality of autistic veterinary surgeons' psychosocial working conditions was exceptionally poor across all seven management standards relative to these norms, falling below the fifth percentile on two standards (demands and managerial support). The mean score for our sample of autistic veterinary surgeons was at the fifth percentile on four standards (peer support, relationships, role and change) and the 10th percentile on one standard (control). The α coefficient met or exceeded 0.70 for each management standard, indicating acceptable internal reliability of the scales.

Table 3 also displays mean scores on each standard generated by a 2007 national survey of UK veterinary surgeons, representing approximately 20% of the membership of the Royal College of Veterinary Surgeons.[8] As per our sample of autistic veterinary surgeons, this sector-representative sample generated a score on the 'demands' standard below the fifth percentile when compared to UK private sector workforce norms. On the remaining six standards, the national veterinary surgeon sample reported superior psychosocial working conditions to those of autistic veterinary surgeons.

Relations between psychosocial working conditions and mental wellbeing

Pearson's correlations were applied to explore associations between psychosocial work environment quality and mental wellbeing. Positive correlations were observed between each management standard and mental wellbeing, indicating that a high-quality psychosocial work environment was associated with better mental wellbeing (Table 4). One standard ('role') exceeded the 0.5 or higher large effect threshold,[25] while the 'control' and 'change' standards fell just below this threshold (0.48 and 0.47). All coefficients exceeded the threshold for a medium strength association ($r = 0.3$) that is commonly applied as an indicator of practical relevance.[26]

The results for hierarchical linear regression analysis with mental wellbeing as the criterion variable are shown in Table 5. The covariates (age, gender and years since qualification) explained 1.4% of the variance in mental wellbeing in model 1, although this was not statistically significant ($R^2 = 0.014$, adjusted $R^2 = -0.023$, $F_{(3,80)} = 0.357$, $p = 0.771$). The addition of psychosocial working conditions encapsulated in the management standards accounted for a significant additional 43.6% of the variance in mental wellbeing in model 2 ($\Delta R^2 = 0.436$, $\Delta F_{(7,73)} = 8.273$, $p < 0.001$). The predictors together explained a significant 45% of the variance in mental wellbeing ($R^2 = 0.45$, adjusted $R^2 = 0.375$, $F_{(10,73)} = 5.975$, $p \leq 0.001$), representing a large effect.[27]

DISCUSSION

This exploratory study represents the first assessment of mental wellbeing and psychosocial work environment quality among autistic veterinary surgeons in the UK. Mental wellbeing was well below UK veterinary surgeon and general adult norms; three out of five respondents reported a mental wellbeing score indicative of major depression and a further one-fifth

TABLE 2 Mental wellbeing in various populations, as scored using the Warwick–Edinburgh Mental Wellbeing Scale (WEMWBS)

WEMWBS	Current study	Autistic adults (Australia) 2015	Veterinary surgeons (UK) 2019	Adults (England) 2016	Adults (Scotland) 2021
Number of participants	85	383	10,279	6936	4557
Mean score (SD)	38.85 (8.42)	40.63 (9.89)	47.7	49.9	48.6

Note: Standard deviations (SDs) are reported where available. Scores reported to two decimal places where available.

TABLE 3 Management Standards Indicator Tool scores

Psychosocial hazard domain (Cronbach's α)	Current study ($n = 85$), M (SD)	Veterinary surgeons, 2007 ($n = 1472–1749$), M (SD)	UK working population M (SD)
Demands (0.70)	2.69[a] (0.56)	2.96[a]	3.26 (0.21)
Control (0.83)	2.99[b] (0.76)	3.47[c]	3.48 (0.45)
Managerial support (0.91)	3.00[a] (1.01)	3.14[d]	3.56 (0.26)
Peer support (0.79)	3.48[d] (0.74)	3.75[c]	3.80 (0.18)
Relationships (0.80)	3.66[d] (0.79)	4.01[c]	4.00 (0.22)
Role (0.81)	3.80[d] (0.62)	4.21[e]	4.23 (0.25)
Change (0.80)	2.67[d] (0.88)	3.22[e]	3.13 (0.36)

Note: UK working population descriptive statistics (mean [*M*], standard deviation [SD], percentile) are drawn from Edwards and Webster's (2012) private sector sample.
[a]Mean score below the 5th percentile.
[b]Mean score at the 10th percentile.
[c]Mean score at the 25th percentile.
[d]Mean score at the 5th percentile.
[e]Mean score at the 50th percentile.

TABLE 4 Correlations between management standards and mental wellbeing, as measured using the Warwick–Edinburgh Mental Wellbeing Scale

Management standards	r
Demands	0.41**
Control	0.48**
Managerial support	0.45**
Peer support	0.36**
Relationships	0.44**
Role	0.55**
Change	0.47**

**$p < 0.01$.

were at risk for depression. Psychosocial work environment quality was likewise poor, falling well short of the HSE's aspirational management standards and that observed in the wider UK veterinary surgeon and private sector workforces. The amount of (i) 'control' over the way work is done and (ii) clarity and absence of conflict regarding 'role' was strongly linked to mental wellbeing.

These findings provide guidance for employers of autistic veterinary surgeons that will facilitate the fulfilment of duties under the Equality Act 2010 and general health and safety legislation. Specifically, in relation to the 'control' standard, the findings suggest that enhanced control over the pace of work and work patterns as well as encouragement of initiative and skill development would have positive implications for mental wellbeing. On the 'role' standard, findings suggest that enhanced clarity about the role and responsibilities involved, as well as the minimisation of competing requirements, would likewise support mental wellbeing. Bartram et al.'s[8] large-scale study of UK veterinary surgeons found associations between both the 'control' and 'role' standards and mental wellbeing of almost identical strength to that observed in our study, suggesting that psychosocial work environment enhancements centred on these domains would likely benefit not only autistic veterinary surgeons but also the wider veterinary surgeon population.

Psychosocial work environment quality reported by autistic veterinary surgeons in our study was considerably poorer than that reported by Bartram et al.'s[8] nationally representative sample of veterinary surgeons surveyed in 2007. This might indicate that autistic veterinary surgeons experience a comparatively poor psychosocial work environment. However, it is equally possible that psychosocial working conditions have deteriorated across the profession since Bartram et al. collected their data and that our findings are not specific to autistic veterinary surgeons but, rather, indicative of the experience of the wider UK veterinary surgeon workforce. Indeed, mental wellbeing in the veterinary profession appears to have deteriorated in the 12 years between 2007[21] and the 2019 Survey of the Veterinary Profession,[9] raising the possibility that the same applies to psychosocial work environment quality. A nationally representative replication of Bartram et al.'s study involving the MSIT and stratification of scores by neurodivergent status would provide clarity in this regard. The Royal

TABLE 5 Multiple linear regression analysis for psychosocial working conditions predicting mental wellbeing

	Model 1			Model 2		
	B	**SE *B***	***β***	***B***	**SE *B***	***β***
Model 1						
Age	–0.240	0.333	–0.274	–0.029	0.278	–0.033
Gender	–1.581	2.035	–0.094	–0.976	1.632	–0.058
Years qualified	0.237	0.316	0.280	–0.025	0.266	–0.030
Model 2						
Demands				2.701	1.696	0.180
Control				3.096	1.335	0.280*
Managerial support				–0.647	1.249	–0.078
Peer support				–0.147	1.574	–0.013
Relationships				1.578	1.541	0.147
Role				3.824	1.581	0.280*
Change				1.153	1.229	0.121
R^2	0.014			0.450		
ΔR^2	0.014			0.436***		
Adj. R^2	–0.023			0.375		

Abbreviations: Adj. R^2, explained variance adjusted; *B*, unstandardised regression coefficient; R^2, explained variance; SE *B*, standard error of unstandardised regression coefficient; β, standardised beta coefficient; ΔR^2, change in explained variance.
*$p < 0.05$.
***$p < 0.001$.

College of Veterinary Surgeons' Survey of the Veterinary Profession, which is administered approximately every 5 years and already includes the WEMWBS and a set of bespoke items concerning psychosocial working conditions, is ideally placed to fulfil this purpose.

The strengths of our study lie in its use of validated measurement instruments for which UK veterinary-specific, general workforce and adult population data are available to facilitate benchmarking. However, there are some limitations to be considered in the interpretation of the findings. First, while the cross-sectional research design is valuable for the exploration of new ideas owing to efficiencies in time and funding requirements and an ability to demonstrate the existence of relationships between variables, which itself is a crucial first step towards establishing a causal link,[28] it precludes definitive conclusions on the direction of causation. Although it is theoretically and empirically plausible that psychosocial working conditions influence mental wellbeing, reverse and/or reciprocal causation cannot be ruled out. Future studies involving retrospective reports (to help establish the temporal order of variables), alternative sources of data (e.g., interview data concerning mental wellbeing) or longitudinal or diary designs could help to definitively establish the causal direction of these relationships.

Second, exploratory studies concerning neglected topics are typically restricted in scale. The current investigation involved a small sample of self-selecting individuals, the majority of whom self-identified as autistic in the absence of a formal diagnosis. Moreover, our sample was predominantly female and drawn from the companion animal sector of the veterinary workforce. As such, these initial findings offer a tentative indication of mental wellbeing and psychosocial work environment quality among autistic veterinary surgeons, the sector-wide generalisability of which requires corroboration through large-scale replication.

Third, while our study highlighted the relevance of generic psychosocial work characteristics encapsulated within the HSE's management standards to autistic veterinary surgeons' mental wellbeing, it is possible that veterinary-specific psychosocial working conditions may be of importance and should be considered in future research. Issues including work–life balance, interactions with animal owners, feeling unsafe when meeting clients alone, aspects of euthanasia, dealing with poor animal welfare, staff management responsibility, client complaints and on-call work have been identified as sources of stress in UK veterinary surgeons[29–31]; research is required to explore the extent to which these and other role-specific aspects of veterinary work might have implications for the mental wellbeing of autistic veterinary surgeons.

In conclusion, this study has offered an initial insight into the mental wellbeing and psychosocial working conditions of autistic veterinary surgeons in the UK. In doing so, it has highlighted a need for acknowledgement of neurodiversity within sector-wide research that provides a foundation on which to design, implement and evaluate interventions concerning modification of the psychosocial work environment to support mental wellbeing and career sustainability.

AUTHOR CONTRIBUTIONS

The initial study concept was provided by Kirstie Pickles with study design by Kirstie Pickles, Jonathan

Houdmont and Bradley Hill. Data were collected by Femke Smits. Femke Smits and Jonathan Houdmont performed the data analysis. All authors contributed to manuscript preparation, and all authors have reviewed and approved the final manuscript.

ACKNOWLEDGEMENTS

This research was supported by a Sarah Brown Mental Health Research Grant from the Royal College of Veterinary Surgeons awarded to Kirstie Pickles, Bradley Hill and Jonathan Houdmont.

CONFLICT OF INTEREST STATEMENT

The authors declare no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in the Nottingham Research Data Management Repository at https://doi.org/10.17639/nott.7280.

ETHICS STATEMENT

Ethical approval for the study was granted by the Research Ethics Committee of the School of Veterinary Medicine at the University of Nottingham (ref. 3369 210430).

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How to cite this article: Smits F, Houdmont J, Hill B, Pickles K. Mental wellbeing and psychosocial working conditions of autistic veterinary surgeons in the UK. Vet Rec. 2023;e3311. https://doi.org/10.1002/vetr.3311